MERCURY: A REGIONAL PROBLEM REQUIRES COLLABORATIVE EFFORTS

Mercury contamination is a global problem. Because mercury emissions can travel great distances, regional strategies are critical to addressing this environmental challenge. A number of regional agreements have been signed to address persistent, bioaccumulative toxics, including mercury.

Great Lakes Binational Toxics Strategy. The Great Lakes Binational Toxics Strategy was signed in April 1997. Under this agreement, Environment Canada (Canada's federal environmental agency) and the US Environmental Protection Agency (EPA) in consultation with other federal departments and agencies, the Great Lake states, the Province of Ontario, and Native American tribes (US) and First Nations (Canada) are working with public and private partners toward the goal of "virtual elimination" from the Great Lakes Basin of anthropogenic (resulting from human activity) releases of 12 persistent bioaccumulative and toxic substances, including mercury.

The Strategy lays out different challenges for the US and Canada. The US challenge is to "seek by 2006, a 50% reduction nationally in the deliberate use of mercury and a 50% reduction in the release of mercury from sources resulting from human activity...to the air nationwide and of releases to the water within the Great Lakes Basin."

The Canadian challenge is to "seek by 2000, a 90% reduction in the release of mercury, or where warranted the use of mercury, from polluting sources resulting from human activity in the Great Lakes Basin."

One important feature of the Strategy is its reliance on public/private partnerships. Three voluntary commitments from industry partners have been developed as a result of the Binational Strategy. A Memorandum of Understanding (MOU) between the EPA and the American Hospital Association calls for the virtual elimination of mercury-containing waste from the health care industry wastestream by 2005 and reducing total hospital waste volume 33% by 2005 and 50% by 2010. The Chlorine Institute, representing the chlorine industry, has made a voluntary commitment to reduce mercury use by 50% by 2005. The northwest Indiana steel mills signed a voluntary agreement in September 1998 with the Lake Michigan Forum (which includes representatives from agriculture, industry, environmental groups, sport fishing groups, academia, and Native American tribes), the Michigan Department of Environmental Quality, and the EPA to reduce mercury found in tools and other products in mills.

In Canada there have been a number of initiatives targeting mercury reduction under the Strategy. The Association of Municipal Recycling Coordinators (AMRC) is working with several Ontario communities to establish household outreach and community collection programs for mercury-containing devices. The Ontario Dental Association is developing a program to manage mercury releases from dental offices.

North American Agreement on Environmental Cooperation's Mercury Action Plan. The Commission for Environmental Cooperation (CEC) is an organization created under the North American Agreement for Environmental Cooperation to address regional environmental concerns. The Agreement complements the environmental provisions established in the North American Free Trade Agreement (NAFTA).

In 1995, the CEC adopted a resolution mandating how the participating governments (Canada, Mexico, and the United States) will cooperate to improve the sound management of chemicals, giving priority to persistent, bioaccumulative, and toxic substances. Under the Sound Management of Chemicals program, the Council decided that there was some urgency to developing action plans for chlordane, DDT, PCBs, and mercury. An initial mercury action plan was signed in November 1997. A revised or Phase 2 Action Plan is currently under development by a task group that includes representatives from the three governments, academia, environmental interests, and industry. The Phase 2 Implementation Plan is expected to be ready for signature by the Council of Ministers in December 1999 after extensive public consultation.

UN Economic Commission for Europe's Heavy Metals Protocol. The 54 member countries of the United Nations Economic Commission for Europe, including the US and Canada, developed a Convention on the Long Range Transport of Atmospheric Pollutants, or the LRTAP Convention, in 1976. Through this convention, member countries have put in place several legally binding international protocols to deal with atmospheric pollution. The first protocols dealt with acid rain and nitrogen oxides. The two most recent initiatives include protocols on persistent organic pollutants and heavy metals.

On June 24, 1998, the Executive Body to the LRTAP Convention adopted the Protocol on Heavy Metals, which targets three particularly harmful metals: cadmium, lead, and mercury. Parties are required to reduce their emissions of these three metals from industrial sources; combustion processes such as coal-powered electricity generation; and incineration of municipal and medical wastes.

The Protocol introduces measures to decrease the use of products such as mercury-containing batteries and proposes management measures for other mercury-containing products, such as electrical components (thermostats, switches), measuring devices (thermometers, manometers, barometers), fluorescent lamps, dental amalgam, pesticides, and paint. (Mercury was removed from paint in the US in the early 1990s.)

One of the benefits of the Protocol lies in its bringing less developed Eastern European countries into an agreement that will ultimately reduce many globally significant sources of mercury emissions.

New England Governors and Eastern Canadian Premiers' Mercury Action Plan. The six New England governors and five Eastern Canadian premiers signed a resolution adopting a Regional Mercury Action Plan in June 1998. The plan was developed by representatives of the six New England states and the five Eastern Canadian provinces with input from the EPA; Environment Canada; the CEC; and two interstate environmental organization—the Northeast Waste Management Officials' Association (which includes officials from the New England states and New York State) and Northeast Coordinated Air Use Management (an organization of air management officials from the New England states, New York State, and New Jersey). The Plan's long-term goal is the virtual elimination of anthropogenic discharges of mercury into the environment. The short-term goal is a reduction of at least 50% by the year 2003 through emission reduction as well as source reduction and safe waste management.

The Plan draws on five major guiding principles: (*a*) The "precautionary principle": "Where there are threats of serious and irreversible damage, lack of full scientific certainty shall not be a rationale for postponing measures to prevent environmental degradation and to protect public health." (*b*) Reducing mercury in one environmental medium will not result in contamination of another medium. (*c*) Coordinated efforts of the New England states and Eastern Canadian provinces are necessary for effective strategies to address mercury issues. (*d*) Environmental goals and objectives, in keeping with sustainable development, will be formulated and implemented in ways that achieve high levels of ecological and human health benefit. (*e*) The "clean hands principle": although out-of-region sources are a major contributor to this environmental threat, the need to coordinate efforts with other regions should not be viewed as a reason to delay action within the region.

The Plan identifies five major areas for action: emission reduction; source reduction and safe waste management; outreach and education; research analysis and strategic monitoring; and managing mercury stockpiles. For each of these action items there are a number of specific recommendations, ranging from regional actions to be taken—such as adopting emissions guidelines for municipal waste combustors that are more stringent than federal standards—to more general recommendations such as advocating for the safe management of US Department of Defense mercury stockpiles.

To assist the jurisdictions involved with the Plan in developing strategies for mercury-containing products, the Northeast Waste Management Officials' Association held a Mercury-Containing Products Summit on January 25, 1999, in Connecticut. The meeting focused on lighting, switches, measuring devices, and chemical products with intentionally added mercury.

EPA-New England has challenged New England medical facilities to lead the nation in eliminating mercury and mercury-containing waste by 2003, two years before the national goal. Other efforts are underway to eliminate mercury products from hospitals. During the spring of 1999, a hospital in Boston and another in New Hampshire initiated fever thermometer exchange programs for their employees. In well-publicized events, these hospitals together collected more than 1400 fever thermometers and provided a non-mercury thermometer in exchange.

In a related initiative, the Nova Scotia Department of Environment is working with the Nova Scotia Dental Association to develop a memorandum of understanding that will address mercury releases from dental offices.

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The views expressed in this manuscript are the professional opinions of the authors and should not be interpreted as policies of their respective agencies.

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Great Lakes Binational Toxics Strategy—http://www.epa.gov/bns/

New England Governors and Eastern Canadian Premiers Mercury Action Plan—http://www.tiac.net/users/negc/1998mercuryplan. html

United Nations Economic Commission for Europe Protocol on Heavy Metals—http://www.unece.org/env/env_eb.htm ■